

Serial No. 10/029,199

Docket No. HI-0065

Amdt. dated January 26, 2006

Reply to Office Action of November 1, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An apparatus for synchronizing frame and detecting code group/number, comprising:

an on time despreader for ~~dispreading~~ despreading a receiving input by having a slot timing position designated after slot synchronization as a sampling point;

an early time and a late time despreaders for dispreading a sampling point that is earlier or later than the sampling point of the on time despreader;

a slew detector for detecting a time offset using energy of a despread signal outputted from the despreaders;

a slew storage connected to the slew detector for storing an outputted slew value at the result of the time offset detection based on the energy of the outputted despread signal from the despreaders;

a multiplexer for selecting one out of outputted values from the on time, the late time and the early time despreaders according to the output of the slew detector;

an energy storage for storing outputted values of the multiplexer; and

a code group detector for detecting frame synchronization and code groups using the outputted values from the energy storage and from the slew storage, respectively.

2. (Original) The apparatus of claim 1, further comprising a code number detector for detecting code numbers using the outputted values from the slew storage and from the frame synchronization and code group detector, respectively.

3. (Original) The apparatus of claim 1, further comprising a synchronous code generator for authorizing signals to each despreader by generating synchronous codes at a terminal for despreading.

4. (Currently amended) The apparatus of claim 1, wherein the slew detector, if $[(\text{Early time energy}) - (\text{Late time energy})]$ is greater than $(\text{On time energy}) / \alpha$, controls the multiplexer to select an early time despreaded energy, wherein ' α ' is designated to correspond to changes in the value of $(\text{Early time energy}) - (\text{Late time energy})$.

5. (Currently amended) The apparatus of claim 1, wherein the slew detector, if $[(\text{Early time energy}) - (\text{Late time energy})]$ is smaller than $-(\text{On time energy}) / \alpha$, controls the

multiplexer to select a late time despreaded energy, wherein 'α' is designated to correspond to changes in the value of (Early time energy) – (Late time energy).

6. (Previously Presented) The apparatus of claim 4, wherein the (On time energy)/α is a standard value for preventing degradation of the slew detector that is caused by noises mingled with a receiving signal.

7. (Canceled)

8. (Currently amended) A method for synchronizing and detecting code group/number of an asynchronous mobile communication system having an initial cell search operation, the method comprising ~~the steps of:~~

synchronizing a slot at a time of system booting;

detecting an energy and a time offset based on ~~the~~ a designated position of ~~a~~ the slot timing; and

detecting frame synchronization and a code group using the detected energy and ~~information~~ information.

wherein the detecting the time offset further comprises:

dispreading for having the designated position of the slot timing as an

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on time sampling point through the slot synchronization;

_____ early time dispreading for having an earlier sampling point than the on
time sampling point;

_____ late time dispreading for having a later sampling point than the on time
sampling point;

_____ controlling a multiplexer to select an energy by comparing outputted
energies from each despreader;

_____ storing slew values through the time offset detection by comparing
outputted energies from each despreader; and

_____ storing the outputted energies from the multiplexer.

9. (Canceled)

10. (Currently amended) The method of ~~claim 9~~claim 8, wherein frame synchronization and code groups are detected by using the slew values through the time offset detection and the outputted values from the multiplexer that are stored.

11. (Currently amended) The method of claim 8, wherein ~~the~~ code number detection is accomplished by using the slew values through the time offset detection and the outputted values from the multiplexer.

12. (Currently amended) The method of claim 9, wherein the ~~step of~~ controlling the multiplexer to select an energy by comparing the outputted energies from each ~~despreaders~~despreader,

(a) if $[(\text{Early time energy}) - (\text{Late time energy})]$ is greater than $(\text{On time energy})/\alpha$, the slew detector controls the multiplexer to select an early time despreaded energy, thereby storing the early time despreaded energy in an energy storage;

(b) if $[(\text{Early time energy}) - (\text{Late time energy})]$ is smaller than $-(\text{On time energy})/\alpha$, the slew detector controls the multiplexer to select a late time despreaded energy, thereby storing the late time despreaded energy in an energy storage; and

(c) if $[(\text{Early time energy}) - (\text{Late time energy})]$ satisfies neither case (a) nor (b), the slew detector controls the multiplexer to select an on time despreaded energy, thereby storing the on time despreaded energy in an energy ~~storage~~storage.

wherein ' α ' is designated to correspond to changes in the value of $(\text{Early time energy}) - (\text{Late time energy})$.

13. (Currently amended) The method of claim 9, wherein the ~~step of~~ storing the slew values through the time offset detection by comparing the outputted energies from each despreader, if $[(\text{Early time energy}) - (\text{Late time energy})]$ is greater than $(\text{On time energy})/\alpha$, meaning that a present standard time is slower than a receiving signal's timing, the present standard timing is ~~retarded (-)~~ decreased to be the receiving signal's timing, making the present standard timing be the early despreaded energy and storing the retarded value as a slew value, wherein ' α ' is designated to correspond to changes in the value of $(\text{Early time energy}) - (\text{Late time energy})$.

14. (Currently amended) The method of claim 9, wherein the ~~step of~~ storing the slew values through the time offset detection by comparing the outputted energies from each despreader, if $[(\text{Early time energy}) - (\text{Late time energy})]$ is smaller than $-(\text{On time energy})/\alpha$, meaning that a present standard time is faster than a receiving signal's timing, the present standard timing is ~~advanced (+)~~ increased to be the receiving signal's timing, making the present standard timing be the late despreaded energy and storing the advanced value as a slew value, wherein ' α ' is designated to correspond to changes in the value of $(\text{Early time energy}) - (\text{Late time energy})$.

15. (Currently amended) The method of claim 10, wherein the ~~step of~~ detecting

frame synchronization and code groups by using the slew values through the time offset and the outputted values from the ~~multiplex-multiplexer~~ that are saved, the slew values are information to manifest which despreader generates the energy used for the frame synchronization and code group detection.

16. (Currently amended) The method of claim 11, wherein the ~~step of~~ detecting code numbers by using the slew values through the time offset and the outputted values from the frame synchronization and code group detector, the slew values are ~~+~~, increasing or decreasing timing information that is derived by summing the slew values ~~of each case~~.

17. (Currently amended) The method of claim 16, wherein the code detector detects code numbers by using the ~~+~~, increasing or decreasing timing information derived by summing the slew values corresponding to the energy used for the frame synchronization and code group detector, being stored in the slew value storage.